

WHAT WE CLAIM IS:

1. A gas monitoring system comprising:
 - a gas line configured to convey gas from a space configured to receive inert gas to a location remote from said space;
 - an oxygen sensor fluidly coupled to said gas line at said location, where said oxygen sensor is configured to determine a partial pressure of oxygen present in said gas; and
 - a filter fluidly coupled to said gas line between said space and said location, where said filter is configured to remove combustible contaminants from said gas before it reaches said oxygen sensor.
2. The gas monitoring system of claim 1, further comprising a float valve fluidly coupled to said gas line within said space, where said float valve is configured to prevent fuel contained within said space entering said gas line.
3. The inert gas control system of claim 1, further comprising a check valve fluidly coupled between an inlet of said gas line and said location.
4. The gas monitoring system of claim 1, further comprising a flame arrestor fluidly coupled between an inlet of said gas line and said location.
5. The gas monitoring system of claim 1, further comprising a pump fluidly coupled to said gas line for conveying said gas from said space to said location.
6. The gas monitoring system of claim 1, further comprising a fuel level gauge disposed within said space and electrically coupled to said controller.
7. The gas monitoring system of claim 1, wherein said oxygen sensor operates at an elevated temperature.
8. The gas monitoring system of claim 1, wherein said oxygen sensor is a “zircon” type oxygen sensor.
9. The gas monitoring system of claim 1, further comprising:
 - a first valve coupled between said space and said location; and

a second valve coupled between ambient air and said location.

10. The gas monitoring system of claim 1, further comprising:
 - an indicator; and
 - a controller electrically coupled to said oxygen sensor and to said indicator, where said controller is configured to activate said indicator when said partial pressure of oxygen reaches a predetermined level.
11. The gas monitoring system of claim 10, further comprising a suction device electrically coupled to said controller, such that said controller can activate said pump periodically.
12. The gas monitoring system of claim 11, wherein said suction device is a pump.
13. The gas monitoring system of claim 10, further comprising:
 - a first valve coupled between said space and said location; and
 - a second valve coupled between ambient air and said location, wherein said first valve and said second valve are electrically coupled to said controller.
14. The gas monitoring system of claim 10, wherein said controller is electrically coupled to:
 - a first valve coupled between said space and said location;
 - a second valve coupled between ambient air and said location;
 - a pump fluidly coupled to said gas line for conveying said gas from said space to said location; and
 - a fuel level gauge within said space.
15. A gas monitoring system comprising:
 - a gas line configured to convey gas from a space configured to receive inert gas to a location remote from said space;
 - an oxygen sensor fluidly coupled to said gas line at said location, where said oxygen sensor is configured to determine a partial pressure of oxygen present in said gas;
 - an indicator; and

a controller electrically coupled to said oxygen sensor and to said indicator, where said controller is configured to activate said indicator when said partial pressure of oxygen exceeds a predetermined level.

16. The gas monitoring system of claim 15, wherein said controller forms part of said oxygen sensor.

17. The gas monitoring system of claim 15, wherein said controller is configured to electrically couple to a flow adjustment mechanism that meters flow of inert gas into said space based on a signal received from said controller when said percentage of oxygen exceeds said predetermined level.

18. The gas monitoring system of claim 17, wherein said adjustment mechanism comprises a valve fluidly coupled between a source of inert gas and said space.

19. The gas monitoring system of claim 17, wherein said adjustment mechanism comprises a valve fluidly coupled between a compressed air source and an air separation module that is fluidly coupled to said space.

20. The gas monitoring system of claim 15, further comprising a filter fluidly coupled to said gas line between said space and said location, where said filter is configured to remove combustible contaminants from said gas before it reaches said oxygen sensor.

21. The gas monitoring system of claim 15, further comprising a float valve fluidly coupled to said gas line within said space, where said float valve is configured to prevent fuel contained within said space entering said gas line.

22. The gas monitoring system of claim 15, further comprising a check valve fluidly coupled between an inlet of said gas line and said location.

23. The gas monitoring system of claim 15, further comprising a flame arrestor fluidly coupled between an inlet of said gas line and said location.

24. The gas monitoring system of claim 15, further comprising a pump fluidly coupled to said gas line for conveying said gas from said space to said location.

25. The gas monitoring system of claim 24, wherein said pump is electrically coupled to said controller, such that said controller can activate said pump periodically.
26. The gas monitoring system of claim 15, further comprising a fuel level gauge disposed within said space and electrically coupled to said controller.
27. The gas monitoring system of claim 15, wherein said oxygen sensor operates at an elevated temperature.
28. The gas monitoring system of claim 15, wherein said oxygen sensor is a “zircon” type oxygen sensor.
29. The gas monitoring system of claim 15, further comprising:
a first valve coupled between said space and said location; and
a second valve coupled between ambient air and said location.
30. The gas monitoring system of claim 29, wherein said first valve and said second valve are electrically coupled to said controller.
31. The gas monitoring system of claim 15, wherein said controller is electrically coupled to:
a first valve coupled between said space and said location;
a second valve coupled between ambient air and said location;
a pump fluidly coupled to said gas line for conveying said gas from said space to said location; and
a fuel level gauge within said space.
32. A method for monitoring an inert gas system, comprising:
conveying gas from a space configured to receive inert gas to a location remote from said space;
sensing at said location a percentage of oxygen present in said gas;
supplying an indication when said percentage of oxygen exceeds a predetermined level.
33. The method of claim 32, further comprising, prior to said sensing, removing combustible contaminants from said gas.

34. The method of claim 32, further comprising, prior to said conveying, preventing fuel contained within said space from being conveyed with said gas.
35. The method of claim 32, further comprising, prior to said sensing, preventing back-flow of said gas towards said space.
36. The method of claim 32, further comprising, prior to said sensing, preventing a flame from traveling from said location and into said space.
37. The method of claim 32, wherein said conveying further comprises pumping said gas from said space to said location.
38. The method of claim 37, wherein said pumping occurs periodically.
39. The method of claim 32, further comprising, prior to said conveying, determining a level of fuel within said space.
40. The method of claim 32, wherein said supplying further comprises illuminating a warning light or generating an audible sound.
41. The method of claim 32, further comprising, metering a flow of inert gas into said space based on indication.
42. A controller for monitoring an inert gas system, comprising:
a processor;
communication circuitry for communicating with at least an oxygen sensor and an indicator; and
a memory comprising:
monitoring procedures for conveying gas from a space configured to receive inert gas to a location remote from said space, and for sensing at said location a percentage of oxygen present in said gas; and
alarm procedures for supplying an indication when said percentage of oxygen exceeds a predetermined level.
43. The controller of claim 42, wherein said memory further comprises control procedures for metering a flow of inert gas into said space based on indication.

44. The controller of claim 42, wherein said monitoring procedures further comprise instructions for periodically pumping said gas from said space to said location.
45. The controller of claim 42, wherein said monitoring procedures further comprise instructions for determining a level of fuel within said space.
46. The controller of claim 42, wherein said alarm procedures further comprise instructions for illuminating a light or generating an audible warning sound when said percentage of oxygen exceeds a predetermined level.